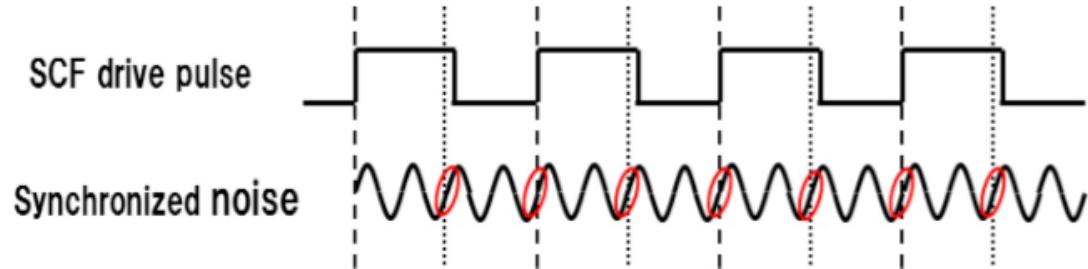
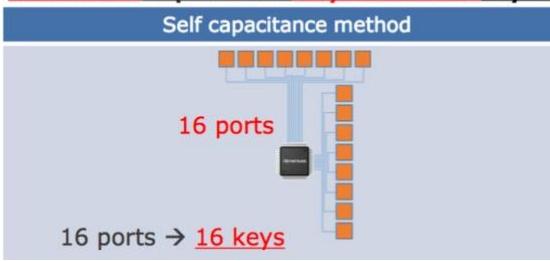
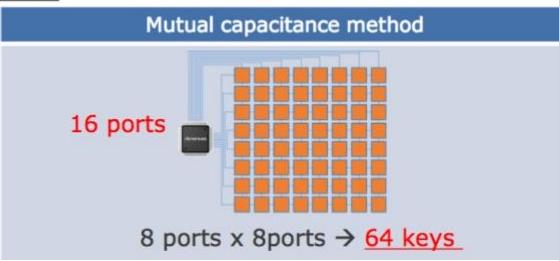
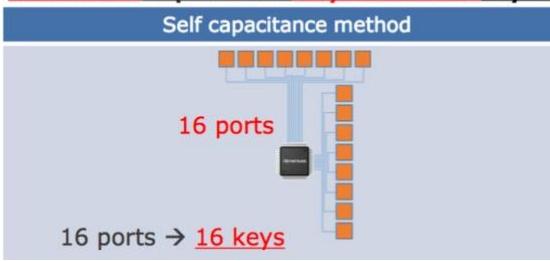
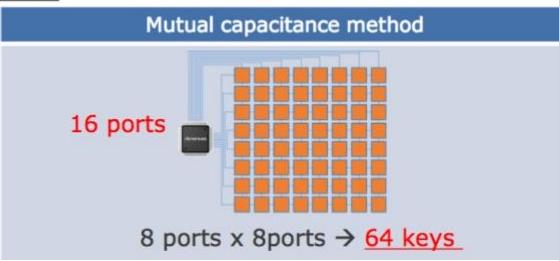
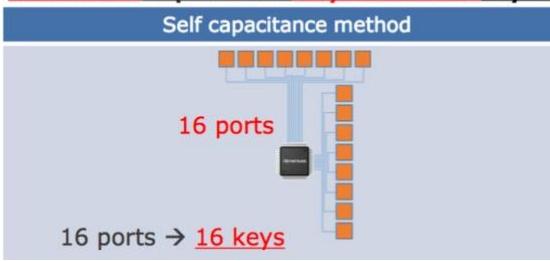
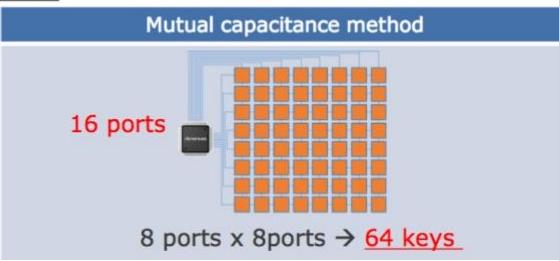


# Exhibit 5

**U.S. Patent No. 8,253,706 ("706 Patent")****Exemplary Accused Products**

Renesas products, including at least each of the following products (and their variations) infringe at least Claim 1 of the '706 Patent: Renesas RX microcontrollers with capacitive touch, such as RX113, RX231, RX230, and RX130. The infringement chart below is based on the RX113 microcontroller ("RX113 MCU"), which is exemplary of the infringement of the '706 Patent.

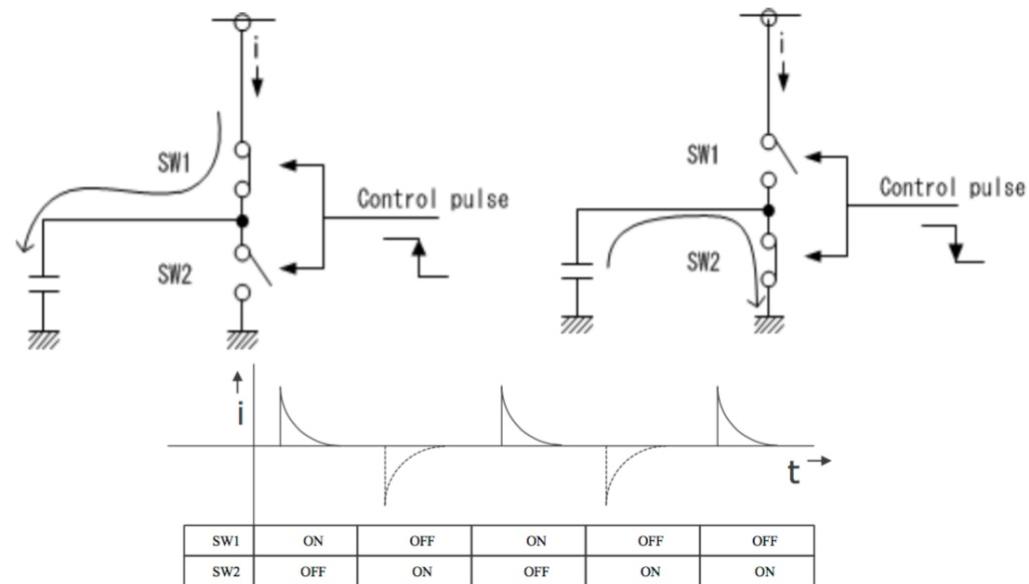
Claim	RX113 MCU
[1pre] A method comprising:	<p>The RX113 MCU provides capacitive touch sensing functionality, including in noisy and moist environments.</p> <p>For example, the RX113 MCU controlled touch sensor may exhibit noise sources impacting signal to noise (SNR) parameters. RX113 MCU utilizes multiple measurements to filter effects of the noise sources.</p> <p>See Cap Touch and 3D gesture solution, at p. 21, <a href="http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0_thinkv_2018-09-14_5b9b7417cfbb0.pdf">http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0_thinkv_2018-09-14_5b9b7417cfbb0.pdf</a>.</p>

	 <p>The diagram illustrates the timing of the SCF drive pulse and the resulting synchronized noise. The SCF drive pulse is a square wave signal with several rising edges. The synchronized noise is a sinusoidal wave that oscillates at a frequency corresponding to the drive pulse. Red circles highlight the points where the noise crosses zero during each cycle, indicating the detection of touch events.</p> <p><i>See Cap Touch and 3D gesture solution, at p. 22, <a href="http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0_thinky_2018-09-14_5b9b7417cfbb0.pdf">http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0_thinky_2018-09-14_5b9b7417cfbb0.pdf</a>.</i></p>				
[1a] acquiring a first response from an output line of a matrix touch screen, the first response being a capacitively induced signal derived from a rising edge of a pulse applied to an input line of the matrix touch screen;	<p>The RX113 MCU acquires a first response from an output line of a matrix touch screen, the first response being a capacitively induced signal derived from a rising edge of a pulse applied to an input line of the matrix touch screen.</p> <p>For example, the RX113 MCU controlled touch sensor acquires a first signal from the matrix touch sensor during the rising edge of the conversion clock.</p> <p><b>Increase cap touch key channels by matrix</b></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #4f81bd; color: white;"> <th style="text-align: center; padding: 5px;">Self capacitance method</th> <th style="text-align: center; padding: 5px;">Mutual capacitance method</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 10px;">  <p>16 ports 16 ports → <u>16 keys</u></p> </td> <td style="text-align: center; padding: 10px;">  <p>16 ports 8 ports x 8ports → <u>64 keys</u></p> </td> </tr> </tbody> </table>	Self capacitance method	Mutual capacitance method	 <p>16 ports 16 ports → <u>16 keys</u></p>	 <p>16 ports 8 ports x 8ports → <u>64 keys</u></p>
Self capacitance method	Mutual capacitance method				
 <p>16 ports 16 ports → <u>16 keys</u></p>	 <p>16 ports 8 ports x 8ports → <u>64 keys</u></p>				

See Cap Touch and 3D gesture solution, at p. 9, [http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0\\_thinkv\\_2018-09-14\\_5b9b7417cfbb0.pdf](http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0_thinkv_2018-09-14_5b9b7417cfbb0.pdf).

In the mutual-capacitance method, a transmission node and a reception node are used to generate an electromagnetic field, and changes in the electromagnetic field between these nodes are detected (Figure 3). With this method, liquid that comes into contact with the operating surface has almost no effect on the electromagnetic field. Thus, this method can be used even in environments where the operating surface is likely to get wet. In addition, in a self-capacitive touch sensor system where electrodes are arranged in a matrix (grid), a false ghost detection occurs if two or more points are touched at the same time. A mutual-capacitive touch sensor system does not have this issue. Thus, a mutual-capacitive system uses a small number of pins to configure many electrodes, and supports multitouch behavior and more sophisticated operations than simple on (touch) and off (not touching).

See <https://www.renesas.com/us/en/solutions/key-technology/human-interface/touch-sensor-system2.html>



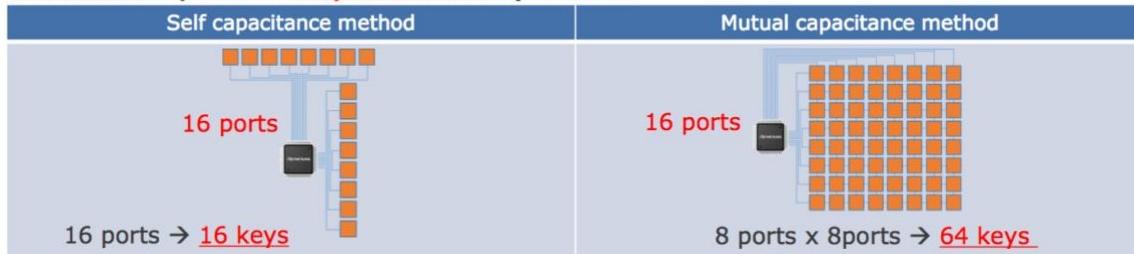
See Cap Touch and 3D gesture solution, at p. 17, [http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0\\_thinkv\\_2018-09-14\\_5b9b7417cfbb0.pdf](http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0_thinkv_2018-09-14_5b9b7417cfbb0.pdf).

	<p><b>■ SCF Clock phase shift</b></p> <p><b>Built-in SCF Drive Pulse Phase Shift Circuit</b>  <b>Avoiding Drive Pulse synchronize with noise mountain / valley by Phase shifting</b></p> <p>Drive Pulse</p> <p>Current of Charge &amp; Discharges</p> <p>Synchronized NOISE</p> <p>Current (Noised)</p> <p>180° Phase shifted Drive Pulse</p> <p>Synchronized Noise Rising at Current decrease</p> <p>180°Phase shift at random</p> <p>Synchronized Noise Rising at Current increase</p> <p>See Cap Touch and 3D gesture solution, at p. 22, <a href="http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0_thinky_2018-09-14_5b9b7417cfbb0.pdf">http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0_thinky_2018-09-14_5b9b7417cfbb0.pdf</a>.</p>
<p>[1b] acquiring a second response from the output line of the matrix touch screen, the second response being a capacitively induced signal derived from a falling</p>	<p>The RX113 MCU acquires a second response from the output line of the matrix touch screen, the second response being a capacitively induced signal derived from a falling edge of the pulse applied to the input line of the matrix touch screen.</p>

edge of the pulse applied to the input line of the matrix touch screen; and

For example, the RX113 MCU acquires a second signal during the falling edge of conversion clock.

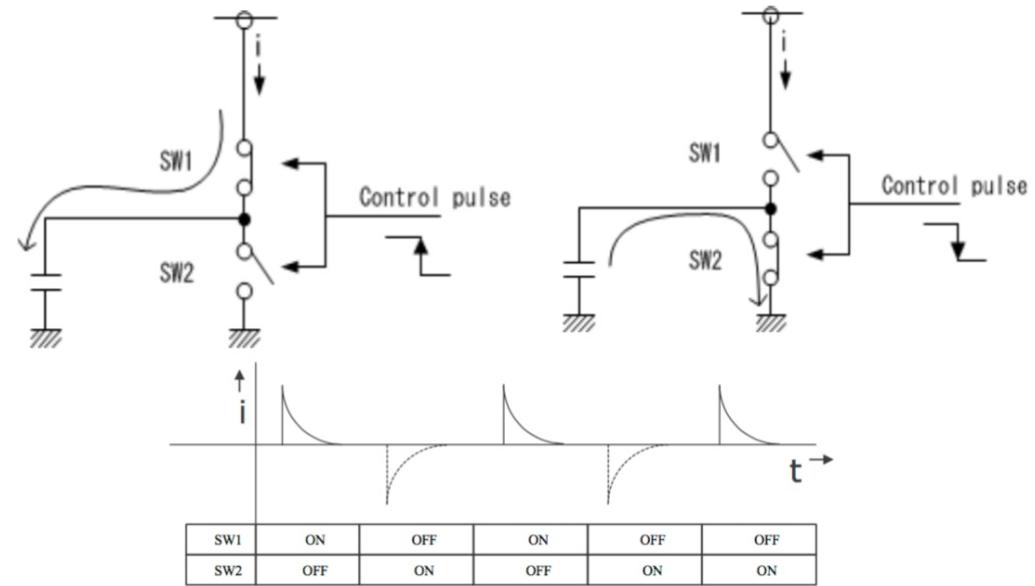
#### Increase cap touch key channels by matrix



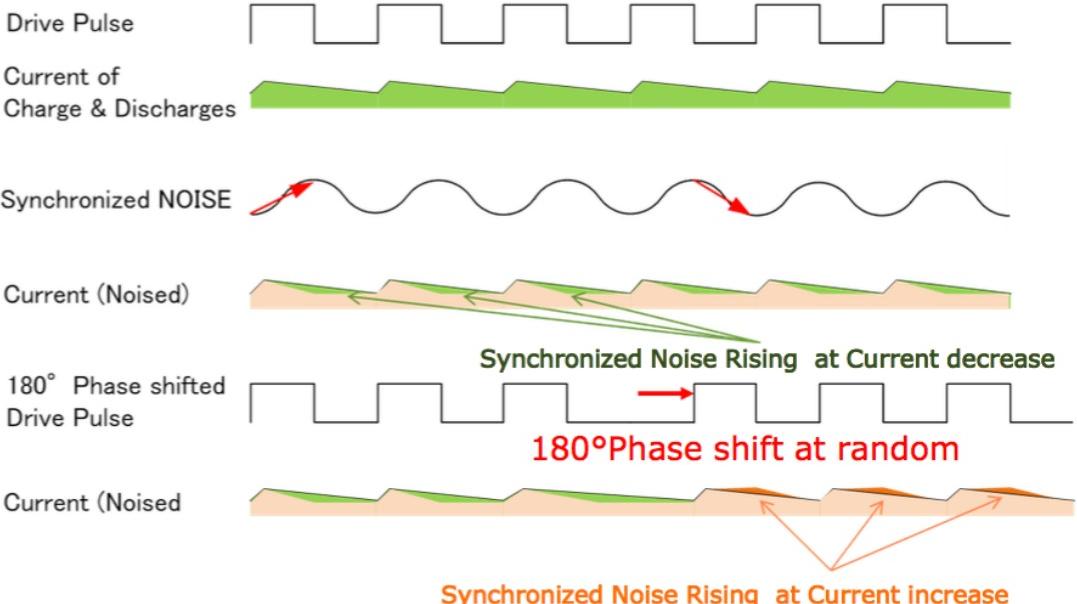
See Cap Touch and 3D gesture solution, at p. 9, [http://img.cheerue.com/D5C994E3-E0CF-4E81-676E-B20D75A511B0\\_thinkv\\_2018-09-14\\_5b9b7417cfbb0.pdf](http://img.cheerue.com/D5C994E3-E0CF-4E81-676E-B20D75A511B0_thinkv_2018-09-14_5b9b7417cfbb0.pdf).

In the mutual-capacitance method, a transmission node and a reception node are used to generate an electromagnetic field, and changes in the electromagnetic field between these nodes are detected (Figure 3). With this method, liquid that comes into contact with the operating surface has almost no effect on the electromagnetic field. Thus, this method can be used even in environments where the operating surface is likely to get wet. In addition, in a self-capacitive touch sensor system where electrodes are arranged in a matrix (grid), a false ghost detection occurs if two or more points are touched at the same time. A mutual-capacitive touch sensor system does not have this issue. Thus, a mutual-capacitive system uses a small number of pins to configure many electrodes, and supports multitouch behavior and more sophisticated operations than simple on (touch) and off (not touching).

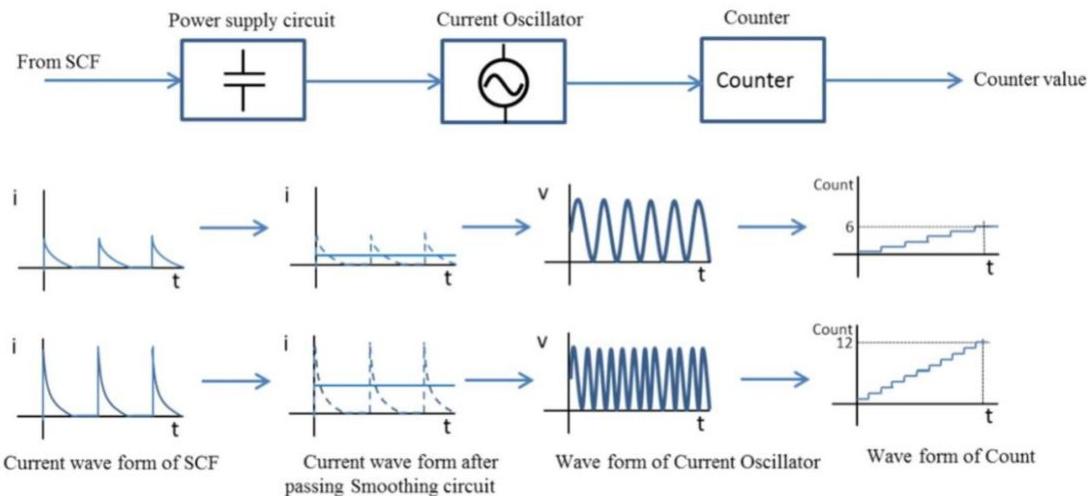
See <https://www.renesas.com/us/en/solutions/key-technology/human-interface/touch-sensor-system2.html>



See Cap Touch and 3D gesture solution, at p. 17, [http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0\\_thinkv\\_2018-09-14\\_5b9b7417cfbb0.pdf](http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0_thinkv_2018-09-14_5b9b7417cfbb0.pdf).

	<p><b>■ SCF Clock phase shift</b></p> <p><b>Built-in SCF Drive Pulse Phase Shift Circuit</b>  <b>Avoiding Drive Pulse synchronize with noise mountain / valley by Phase shifting</b></p>  <p>See Cap Touch and 3D gesture solution, at p. 22, <a href="http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0_thinky_2018-09-14_5b9b7417cfbb0.pdf">http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0_thinky_2018-09-14_5b9b7417cfbb0.pdf</a>.</p>
<p>[1c] manipulating the first response and the second response to reject noise at frequencies less than a frequency associated with the pulse.</p>	<p>The RX113 MCU manipulates the first response and the second response to reject noise at frequencies less than a frequency associated with the pulse.</p>

For example, the RX113 MCU manipulates current (noised) measurements which include the first and second responses to reject noise having low or at the touch sensor's operational frequency.



See Cap Touch and 3D gesture solution, at p. 18, [http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0\\_thinkv\\_2018-09-14\\_5b9b7417cfbb0.pdf](http://img.cheerue.com/D5C994E3-F0CF-4E81-676E-B20D75A511B0_thinkv_2018-09-14_5b9b7417cfbb0.pdf).